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a phase error tone tracking mixer and filter circuit wherein the tone tracking mixer and filter circuit input is coupled to the phase detector input; and

a channel compensation circuit wherein an output of the tone tracking mixer and filter circuit is coupled to the channel compensation circuit input and an output of the channel compensation circuit is coupled to one of the plurality of summing junction inputs

26. (new) The multi-carrier transmission system for carrier phase and frequency error correction of claim 21, wherein each of the plurality of tone tracking mixer and filter circuits includes:

a first mixer wherein a first mixer input is coupled to the input of the tone tracking mixer and filter circuit and wherein a second mixer input is coupled to a sinusoidal signal set to convert a desired tone, of a plurality of tones, disposed in a multi-carrier signal spectrum to a baseband frequency; and

a second mixer wherein a first input of the second mixer is coupled to an output of the first mixer and wherein a second input of the second mixer is coupled to a decision data signal and an output of the second mixer is coupled to the input of the channel compensation circuit.

27. (new) The multi-carrier transmission system for carrier phase and frequency error correction of claim 8, wherein the multi-carrier modulation receiver is disposed as an integrated circuit upon the substrate by a CMOS process.

REMARKS

The afore-mentioned application has been amended. No new matter has been added. Entry of the amendment and examination of the aforementioned application as amended is hereby requested.

Attached hereto is a marked-up version of the changes made to the

Application No. 09/826,969

specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (amended) A method of compensating for carrier frequency and phase errors of a received multi-carrier modulated signal, the received multi-carrier signal including [modulated carriers] data tones for transmitting [known] data and [unmodulated carriers] training tones for error correction, comprising:

time domain down converting the received multi-carrier signal to base-band to provide a down-converted signal, the down-converted signal including a plurality of [modulated carriers] data tones for transmitting [known] data and [unmodulated carriers] training tones for carrier phase error correction;

sampling [an unmodulated carrier] a training tone of the down-converted signal to provide received data samples;

providing a reference signal derived from the [unmodulated carrier] training tone of the down-converted signal; and

estimating phase errors from a phase difference between the [unmodulated carrier] training tone and the reference signal derived from the [unmodulated carrier] training tone of the down-converted signal to provide a plurality of received sample phase error estimates for each [modulated carrier] data tone.

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